

# Precision Fixed Attenuator

## BW-S20W2+

50Ω 2W 20dB DC to 18000 MHz



CASE STYLE: FF659

Connectors	Model
SMA Female-SMA Male	BW-S20W2+

**+RoHS Compliant**

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

### Maximum Ratings

Operating Temperature -55°C to 100°C

Storage Temperature -55°C to 100°C\*\*

\*\*With mated connectors. Unmated, 85°C max.

Permanent damage may occur if any of these limits are exceeded.

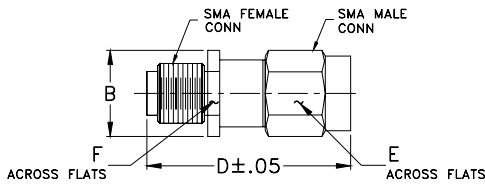
### Features

- DC to 18000 MHz
- precise attenuation
- excellent VSWR, 1.20 typ.
- stainless steel SMA male and female connectors

### Applications

- matching
- instrumentation
- test set-ups

### Outline Drawing



### Outline Dimensions (inch/mm)

B	D	E	F	wt
.36	.99	.312	.312	grams
9.14	25.15	7.92	7.92	5.1

### Electrical Specifications

FREQ. RANGE (MHz)	ATTENUATION <sup>1</sup> (dB)		VSWR <sup>2</sup> (:1)			MAX. INPUT POWER <sup>3</sup> (W)
	Nom.	ACCURACY	DC-4 GHz Max.	4-8 GHz Max.	8-12.4 GHz Max.	
$f_L$ - $f_U$						
DC-18000	20	-0.5, +0.8	1.20	1.25	1.30	2

1. At 25°C, accuracy includes frequency and power variations. Temperature coefficient for attenuation: .0004dB/dB/°C typ.

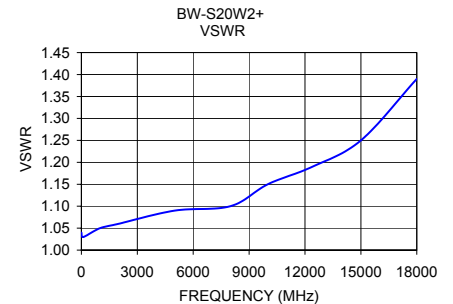
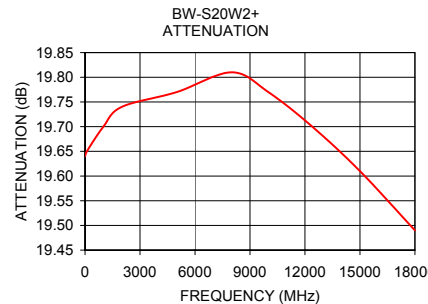
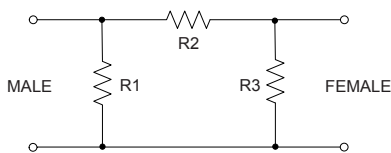
2. VSWR from 12.4 to 18 GHz, 1.6:1 typ.

3. Average power at 25°C ambient, derate linearly to 0.5W at 100°C. Peak Power 125W max. 5µsec pulse width, 100 Hz PRF

### Typical Performance Data

Frequency (MHz)	Attenuation (dB)	VSWR (:1)
1.00	19.64	1.04
100.00	19.65	1.03
1000.00	19.70	1.05
1999.90	19.74	1.06
5000.00	19.77	1.09
7999.90	19.81	1.10
9999.90	19.77	1.15
12400.10	19.70	1.19
15000.00	19.61	1.25
18000.00	19.49	1.39

### Electrical Schematic



**Notes**

- A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
- B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at [www.minicircuits.com/MCLStore/terms.jsp](http://www.minicircuits.com/MCLStore/terms.jsp)



# Fixed Attenuator

# BW-S20W2+

## Typical Performance Data

FREQUENCY (MHz)	ATTENUATION (dB)	RETURN LOSS (dB)
1.00	19.64	34.15
100.00	19.65	36.61
1000.00	19.70	32.26
1999.90	19.74	30.71
5000.00	19.77	27.32
7999.90	19.81	26.44
9999.90	19.77	23.13
12400.10	19.70	21.23
15000.00	19.61	19.08
18000.00	19.49	15.75

REV. X1  
BW-S20W2+  
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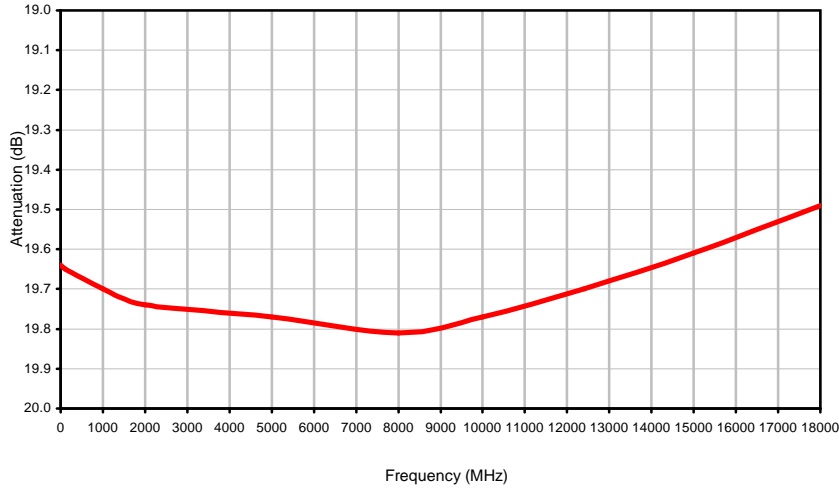


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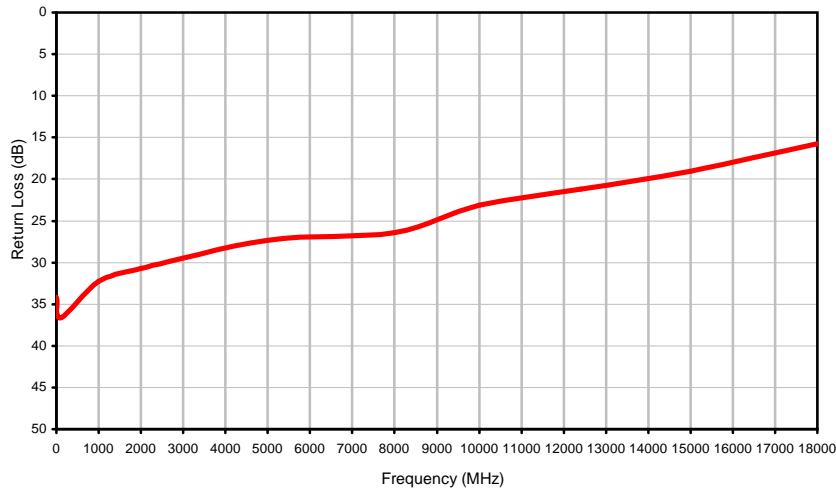


## Typical Performance Curves

Attenuation



Return Loss

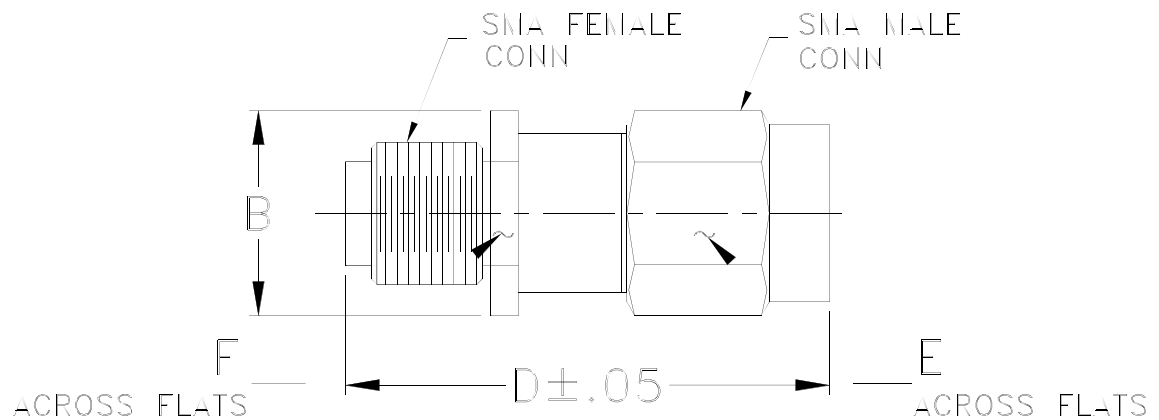


# Case Style

# FF

## Outline Dimensions

FF658  
FF659



CASE #.	A	B	C	D	E	F	WT GRAMS
FF658	--	.36 (9.14)	--	.85 (21.59)	.312 (7.92)	.312 (7.92)	4.3
FF659	--		--	.99 (25.15)			5.1

Dimensions are in inches (mm). Tolerances: 2Pl.  $\pm .03$ ; 3Pl.  $\pm .015$

### Note:

1. Case material: Stainless steel.

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All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

<b>Specification</b>	<b>Test/Inspection Condition</b>	<b>Reference/Spec</b>
Operating Temperature	-55° to 100°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Barometric Pressure	100,000 Feet	MIL-STD-202, Method 105, Condition D
Humidity	90% RH, 65°C Units may require bake-out after humidity to restore full performance.	MIL-STD-202, Method 103
Thermal Shock	-65° to 125°C, 5 cycles	MIL-STD-202, Method 107, Condition B
Vibration (High Frequency)	20g peak, 10-2000 Hz, 12 times in each of three perpendicular directions (total 36)	MIL-STD-202, Method 204, Condition D
Mechanical Shock	100g, 6ms sawtooth, 3 shocks each direction 3 axes (total 18)	MIL-STD-202, Method 213, Condition I